

Studies in American Hesperioidea, on the synonymy and genitalia of some species, 2.
1934, *ibid.*, **60**, pp. 17–30.

Studies in the American Hesperioidea, on the synonymy of some species, 3.
1934, *ibid.*, **60**, pp. 121–132.

Studies in the American Hesperioidea, on the synonymy and the male genitalia of some species, 4.

1934, *ibid.*, **60**, pp. 265–280.

New species of *Pellicia* with remarks on the genus.
1939, *ibid.*, **65**, pp. 135–159.

New neotropical Hesperiidæ and notes on others.
1940, *ibid.*, **66**, pp. 121–140.

New *Laccobius* (Coleoptera: Hydrophilidae) from the Pacific Northwest, with Notes on Previously Named Species¹

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Abstract *Laccobius acutipennis*, *L. columbianus*, *L. nevadensis*, *L. pacificus*, and *L. truncatipennis*, are described as new. Notes are given on the identity of *L. agilis* (Rand.) and *L. ellipticus* LeC.

Prior to the study of d'Orchymont (1942) there were considered to be only two species of *Laccobius* in North America, *L. agilis* (Rand.) and *L. ellipticus* LeC., and based upon determinations I have seen in collections these were often confused. Any determinations or citations prior to 1942 must, in my opinion, be ignored until the material concerned can be reexamined. In the course of preparing keys to the species of aquatic Hydrophilidae for inclusion in the forthcoming Part V of Dr. M. H. Hatch's **Beetles of the Pacific Northwest** several new species were discovered. They are described in this paper in order to make the names available for use in the above-mentioned work, and notes are presented on the type series of *L. ellipticus* LeC.³ No key is presented here, as it will be included in Hatch's book.

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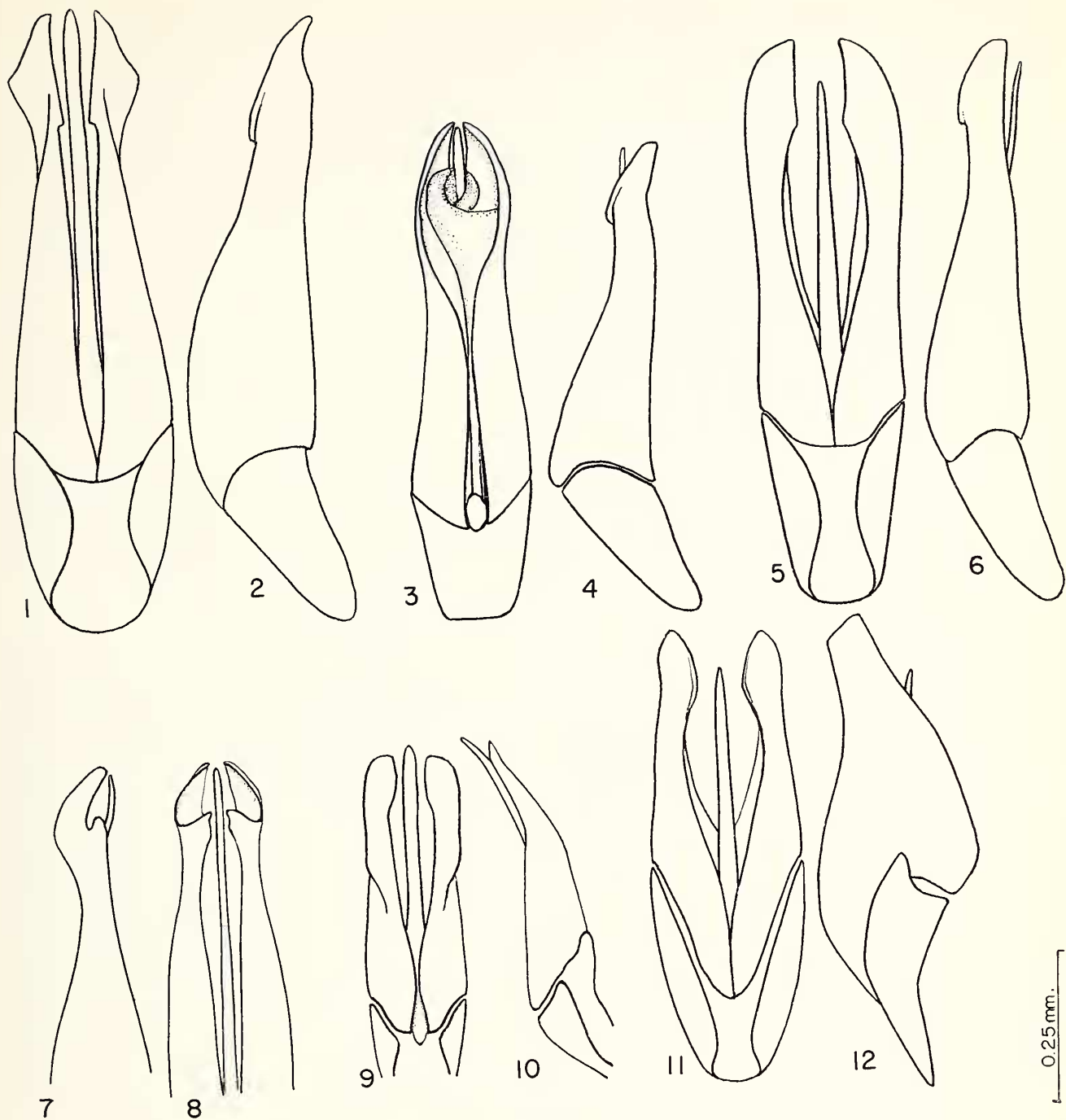


FIG. 1. *Laccobius acutipenis* Miller, new species. Aedeagus, dorsal view.
 FIG. 2. *Laccobius acutipenis* Miller, new species. Aedeagus, lateral view.
 FIG. 3. *Laccobius carri* d'Orchymont. Aedeagus, ventral view.
 FIG. 4. *Laccobius carri* d'Orchymont. Aedeagus, lateral view.
 FIG. 5. *Laccobius nevadensis* Miller, new species. Aedeagus, dorsal view.
 FIG. 6. *Laccobius nevadensis* Miller, new species. Aedeagus, lateral view.
 FIG. 7. *Laccobius pacificus* Miller, new species. Aedeagus, lateral view.
 FIG. 8. *Laccobius pacificus* Miller, new species. Aedeagus, ventral view.
 FIG. 9. *Laccobius columbianus* Miller, new species. Aedeagus, dorsal view.
 FIG. 10. *Laccobius columbianus* Miller, new species. Aedeagus, lateral view.
 FIG. 11. *Laccobius truncatipenis* Miller, new species. Aedeagus, dorsal view.
 FIG. 12. *Laccobius truncatipenis* Miller, new species. Aedeagus, lateral view.

the material, which is generally equivalent to the original sources from which it was borrowed. Dr. Jerome G. Rozen, American Museum of Natural History, New York (AMNH); Mr. Hugh B. Leech, California Academy of Sciences, San Francisco (CAS); Mr. W. J. Brown, Canadian National Collection, Ottawa (CNC); Mr. H. S. Dybas, Chicago Natural History Museum (CNHM); Mr. J. J. Davis, Hanford, Washington, private collection (JJD); Mr. Joe Schuh, Klamath Falls, Oregon, private collection (JS); Mr. Joseph Capizzi, Oregon Department of Agriculture (ODA); Dr. Jack Lattin, Oregon State University, Corvallis (OSU); Dr. W. F. Barr, University of Idaho, Moscow (UI); Dr. M. H. Hatch, University of Washington (UW). Material in the author's collection is referred to as (DM). Dr. P. J. Darlington, of the Museum of Comparative Zoology, Harvard, was most kind in allowing me to examine the type series of *L. ellipticus* LeC. Mr. Leech, and Dr. Paul Spangler of the Smithsonian Institution, have read the manuscript. The drawings are by Mrs. Helen Houk, of the University of Washington.

Laccobius acutipenis Miller, new species

MALE. Length 2.6–3.4 mm; form broadly oval; head metallic olive green, lightly punctate, lightly alutaceous between the punctures, without a pale area before the eyes; pronotum metallic olive green discally, with a narrow, light brown lateral margin which extends inward along the posterior pronotal margin, very lightly alutaceous between the punctures in some areas; elytra dusky brown, with a darker spot on the humerus, a diamond of four such spots near the suture before the middle, a larger and a smaller spot posterolateral to this diamond, a spot on the suture posterior to the diamond, and another more lateral and farther posterior, punctation strong and regular, arranged in imperfect longitudinal lines, each puncture marked with dark brown; venter black with the legs except the coxae, the prothorax, and the basal portions of the profemora, the palpi, and the antennae except for the club paler; aedeagus with the median lobe filiform, parameres in dorsal view flat, spatulate, the lateral margin elbowed near the tip and the tip acute, the inner margin straight from the tip anteriorly for about one-fourth its length and then sharply curving laterally (fig. 1), in lateral view the dorsal margin curving smoothly downward, the ventral margin curving smoothly to near the tip and then bending sharply to meet the dorsal margin, the parameres with no ventral shelf extending toward or around the median lobe (fig. 2).

FEMALE. Differing from the male externally only in the secondary sexual characters of the protarsus, and not distinguishable from related species.

HOLOTYPE. Male, Alturas L. (Sawtooth Mts.), Idaho, July 22, 1952, B. Malkin (UW).

PARATYPES (all males). Idaho: 5, same data as holotype (2 CNHM, 1 DM, 2 UW); 2, Stanley L. (Sawtooth Mts.) (1 CNHM, 1 UW).

The large size, lack of pale spots before the eyes, nearly regular arrangement of the punctation, and general darkness of the background color place this species close to *L. agilis* (Rand.) as *agilis* is interpreted here. The color pattern is not diagnostic, since there is considerable variability in the development of the spot pattern, and in some specimens some spots are missing.

Laccobius agilis (Randall)

Hydrophilus agilis Rand. 1838: 19–20.

? *Laccobius punctatus* Melsh. 1846: 100.

L. agilis, LeC. 1855: 363 (probably in part). d'Orch. 1942: 1–2, 7, 13–14.
Leech and Chandler 1956: 343.

L. ellipticus, Stace Smith 1930: 23 (nec LeC.).

No types exist, so that the identity of this species is uncertain. However the species which d'Orchymont (1954) chose to represent the name is probably the correct one. Randall's material was from Maine, and I have seen a specimen of *agilis* sensu d'Orchymont from that state (UW).

Laccobius columbianus Miller, new species

MALE. Form oval, nearly parallel sided; length 2.4–2.8 mm; head lightly punctate and distinctly but lightly alutaceous between the punctures, metallic olive green, with a small, triangular, diffusely paler area before each eye; pronotum lightly punctate and lightly but distinctly alutaceous between the punctures, the disc metallic olive green, the margins brownish yellow, this pale marginal area extending nearly to the midline on the posterior border so that the darker discal area is reduced to a nearly perfect semicircle; scutellum metallic olive green, clearly alutaceous, with few punctures; elytra strongly punctate, the punctures nearly perfectly arranged in longitudinal series which are very close together, yellowish brown with each puncture marked with dark brown, the entire elytron often irregularly marked with dark brown spots which may coalesce to leave nearly the entire surface dark except along the margins and in an area near the suture extending anteriorly from the elytral apex; venter black with the legs except the coxae, the antennae and the palpi paler; aedeagus with the median lobe filiform, the parameres in dorsal view flat, spatulate, with both margins nearly straight and parallel to each other, the tips nearly truncate with their inner corner a sharp angle (fig. 9), in lateral view both dorsal and ventral margins bowed dorsally with the highest point about one-third distant from the tip (fig. 10).

FEMALE. Externally identical to the male except for the secondary sexual characters of the protarsus.

HOLOTYPE. Male, Copper Mt., B. C., August 21, 1929, G. Stace Smith (CNC).
PARATYPES (all males). British Columbia: 1, Copper Mt. (CNC); 1, 143 Mile House, Cariboo Road (CAS). Manitoba: 2, Winnipeg (1 AMNH, 1 DM).

As indicated by the description there is some variability in coloration. The species has a unique combination of characters which makes it difficult to relate to any other, but it is probably closest to the **acutipennis**–*agilis* section of the genus. The semicircular, discal dark area and light but distinct alutation of the pronotum are probably sufficient to separate this species from all others in North America, but determinations should not be made without examination of the male genitalia.

Laccobius ellipticus LeC.

Laccobius ellipticus LeC. 1855: 363 (probably in part). d'Orch. 1942: 2, 7, 15–17. Leech and Chandler 1956: 343.

The type series, in the Museum of Comparative Zoology, Harvard, consists of three cotypes, all bearing gold discs indicating California. Cotype #1 is a female and appears to be *L. carri* d'Orch. or near. Cotype #2 is a male and fits *ellipticus* as considered here and sensu d'Orchymont, and is hereby designated as the lectotype for the species. Cotype #3 is a male but has not been dissected; externally it resembles #2 very closely and is probably the same species.

Laccobius nevadensis Miller, new species

MALE. Form oval; length 2.5–2.8 mm; head metallic olive green with a pale yellow triangular spot extending between the anterior edge of the eye and the labrum, lightly punctate and slightly alutaceous between the punctures; pronotum with a metallic, olive green area covering the discal third and extending laterally in the center about halfway to the margins as a pair of broad, anteriorly slanted wings, the margins pale yellow; pronotum lightly punctate and very slightly alutaceous in some areas; scutellum metallic olive green, alutaceous, with few punctures; elytra pale yellow, lightly punctate, each puncture marked with dark brown except those near the margins, near the scutellum, and in a nearly circular area on each elytron just anterior to the tip next to the suture, each elytron with a dark brown spot about midway to the apex near the suture, another slightly anterior and lateral to the first, and two more at the same level as the first but near the margin; venter black, the legs (except the coxae, trochanters, and the basal part of the profemora), palpi and antennae paler, the antennal club intermediate in color; median lobe of the aedeagus filiform, pale brown; parameres dark brown with their tips pale, and very stout, in dorsal view slightly bowed out at the middle, the tips bent downward, the inner margin bending sharply laterally slightly back from the tip and from there anteriorly gradually bowed (fig. 5), parameres in lateral view bowed very slightly ventrally at the middle, the tips curving inward and ventrally and rather bluntly pointed (fig. 6).

FEMALE. Externally identical to the male except for the secondary sexual characters of the protarsus, and not distinguishable from related species.

HOLOTYPE. Male, Lower Klamath Lake, Oregon, May 30, 1955, Toby Schuh (UW).

PARATYPES (all males). Oregon: 8, Lower Klamath Lake (1 UW, 2 DM, 5 JS). Nevada: 2, Walker Lake (1 UI, 1 DM).

The color pattern of the head and pronotum is fairly consistent in this species, but the elytra are somewhat variable in their general darkening and in the development of the various dark spots. This and the following two species are nearly identical externally, but can be separated from others in the genus by the distinctive wing-like shape of the extensions of the dark discal area of the pronotum. They can be separated from each other only by the male genitalia.

Seven of the Lower Klamath Lake, Oregon paratypes are labeled as having been taken in an alkaline lake.

Laccobius pacificus Miller, new species

MALE. Form broadly oval; length 2.1–3.1 mm; externally identical to *L. nevadensis* Miller, new species, described above, except slightly broader and averaging slightly darker; aedeagus in dorsal view not distinguishable from that of *L. carri* d'Orch. (parameres elongate, straight, the tips slightly enlarged and curving sharply downward) (fig. 4), but in lateral and ventral

views it can be seen that in place of the membranous ventral shelf which is present on each paramere of *carri* and curves upward around the median lobe, **pacificus** bears a rounded knob with a small tooth on the medial edge of its tip (compare fig. 3 with fig. 8, and fig. 4 with fig. 7).

FEMALE. Externally identical to the male except for the secondary sexual characters of the protarsus, and not distinguishable from related species.

HOLOTYPE. Male, Sultan, Washington, May 2, 1930, no collector (UW).

PARATYPES (all males). Washington: 1, Bogachiel R. (UW); 1, Castle Rock (UW); 2, Chehalis (UW); 1, Cicero (N. Fk. Stillaguamish R., Snohomish Co.) (UW); 1, Green River (UW); 6, Hanford (Columbia R.) (JJD); 1, Lyons Ferry (UW); 1, Renton (UW); 4, Sultan (UW). Idaho: 1, Magic Hot Springs (Twin Falls Co.) (UW). Oregon: 1, Brookings (Myrtle Grove, Chetco R.) (OSU); 4, Corvallis (1 UW, 3 ODA); 1, Cottage Grove (UW); 4, Dayton (UW); 6, Grave Cr. (Josephine Co.) (1 DM, 2 CNHM, 3 UW); 1, John Day Gorge (CNHM); 2, Prineville (CNHM); 4, Sucker Cr. Cnyn. (2 UW, 2 CNHM); 3, Trail (Jackson Co.) (1 UW, 1 CNHM, 1 DM). California: 2, Ben Lomond (DM), 1, Santa Cruz (UW). Colorado: 3, Greeley (1 DM, 2 AMNH).

Although the aedeagus of this species closely resembles that of *L. carri* d'Orch., the beetle externally resembles the species described here before and after it. The group can be separated only by the male genitalia.

Laccobius truncatipennis Miller, new species

MALE. Form broadly oval; length 2.2–3.1 mm; head metallic brownish to olive green, lightly punctate and lightly alutaceous between the punctures, with a diffuse pale area in front of each eye which does not reach the labrum; pronotum lightly punctate and lightly alutaceous between the punctures in some areas, with the color pattern similar to that of *L. nevadensis* Miller, new species, described above; scutellum colored as the elytral disc, lightly punctate and alutaceous; elytra brownish yellow, with moderate punctation, each puncture marked with a dark brown spot, each elytron bearing a dark brown spot on the humerus, a large spot on the suture about halfway back, a diamond of four smaller spots located between these two but closer to the sutural spot, and a streak near the margin about on a level with the sutural spot, but paler on the elytral margins and in a rounded area on each elytron at the tip near the suture; venter black, the trochanters and tibial bases dark brown, the legs distal to the tibial bases, the palpi and the antennae brownish yellow; aedeagus with the parameres short and stubby, in dorsal view bluntly rounded at the tips, their inner margins bending sharply outward just back of the tip and from there anteriorly slightly bowed (fig. 11), in lateral view the dorsal margin slightly and the ventral margin strongly bent upwards so that the effect resembles the prow of a boat (fig. 12), the median lobe filiform.

FEMALE. Externally identical to the male except for the secondary sexual characters of the protarsus, and not distinguishable from related species.

HOLOTYPE. Male, North Fork Nooksack R., Washington, July 17, 1932, no collector (UW).

PARATYPES (all males). Washington: 1, Lakebay (UW); 1, Dans Creek (UW); 3, N. Fk. Nooksack R. (1 DM, 2 UW); 1, Skagit R. (UW); 1, Stilla-

guamish R. (UW); 2, Stuck R. (1 UW, 1 DM). Oregon: 1, Corvallis (ODA); 1, Salem (ODA).

As with the other species described in the genus, there is considerable variability in the general darkness of the elytral background and in the development of the elytral spots, so that the color pattern is not diagnostic. This species is nearly identical to the two preceding species and can be separated from them only by the male genitalia.

Literature Cited

- D'ORCHYMONT, A. 1942. Revision des *Laccobius* américains (Coleoptera. Hydrophilidae. Hydrobiini). *Bull. Mus. Roy. Hist. Nat. Belg.*, **18**(30): 1-18.
- LECONTE, J. L. 1855. Synopsis of the Hydrophilidae of the United States. *Proc. Acad. Nat. Sci. Phila.*, **7**: 356-375.
- LEECH, H. B., AND H. P. CHANDLER. 1956. Aquatic Coleoptera. *In* R. L. Usinger (Ed.), *Aquatic insects of California with keys to North American genera and California species*. Univ. of Calif. Press, Berkeley and Los Angeles.
- MELSHEIMER, F. E. 1846. Description of new species of Coleoptera of the United States. *Proc. Acad. Nat. Sci. Phila.*, **2**: 26-43, 98-118, 134-160, 213-223, 302-318.
- RANDALL, J. W. 1838. Descriptions of new species of coleopterous insects inhabiting the state of Maine. *Boston J. Nat. Hist.*, **2**: 1-33.
- STACE SMITH, G. 1930. Coleoptera, Part II. *Museum and Art Notes*, **V**(L): 22-25.

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